were harvested. The product was nearly 20 bushels of as fine turnips as ever I saw. I cannot doubt but the sulphur in the soil exerted a beneficial influence upon the growth of the turnips."

My experience of four years in cultivating clover upon this kind of land, fully confirm Mr. Chatterly's statements; but from the length of this paper I must forbear to go into particulars.

The opinions I have expessed in this communication, I trust are correct; what I have stated as facts, I believe are so, but if I am in an error, I shall be happy to be set right, as I have no favourite theories that I wish to establish at the expense of truth.

LEVI BARTLETT.

Mr. Bartlett's Agricultural Essay, which will be found in this paper, is a masterly production, distinguished alike for sound sense. science simplified, and practical knowledge. It should be *studied* as well as read.—*Balt. Am. Far.*

RULES FOR IMPROVEMENT IN BREEDING STOCK.

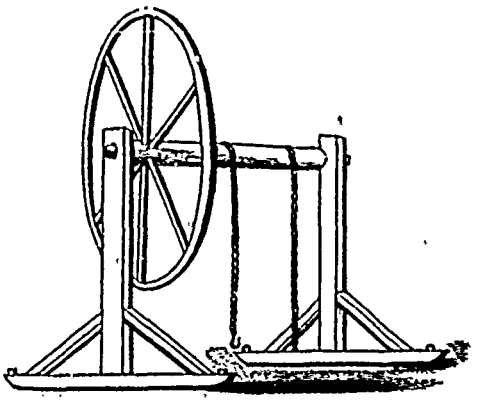
The rules for breeding all kinds of domestic stock, whether the horse, the ox, the sheep, or the pig, are very simple, the judgment, however, required in making selections and coupling animal together, with a view of *continual improvement*, can only be acquired by persons possessing an innate talent for the thing, and long personal experience in its practice. Still, every one who is disposed may effect something, and for their guide we merely give in a few words the long adopted principles of most eminent breeders of domestic animals.

1. When better materials do not exist, or the person wishing to make the improvements has not the means of going abroad for so doing, choose from the *best natives* at hand for this purpose.

2 But when it is possible to do so, obtain *thorough-bred* males of the proper kind from superior improved stocks, to cross on to the native female, and so continue breeding up the grade females to the thorough-bred males.

3. Be very careful on a thorough-bred stock to use no male which is not at least *equal* to the females, and if he can be found *superior*, so much the better, for this will ensure still further improvement, if possible, in the progeny.

In various communications to the agricultural journals for the past five years, we have repeatedly urged on the farmers of our country the practice of the first and second rules above; for in following them, great and decided improvements may be made at a very cheap rate. What our countrymen must fail in, except in New England, where the beautiful reds predominate, is a want of *uniformity* prevading their stock. Animals look much better together when they match: that is, that all shall be as near alike as possible in size, in shape, in color, in their horns, and in their *general* expression. Thus formed, they reflect a beauty on each other; and although they may command no particular attention single, yet as a body they will excite respect, and if pretty good, not unfrequently admiration; for they denote at least, that there is an established system in their breeding. In Europe these incongruities do not so generally prevail. In one district, the traveller observes that the animals are nearly all black, *without* horns in another, they are uniformly the same color *with* horns, a few miles beyond, and we find them suddenly changed to a pure red; again, they may be white, and further they appear in mixed colors, though still preserving a uniformity, as in the case of the Italian, Swiss, Dutch, Jersey, Ayrshire, Hereford, and Durham cattle.—*American Agriculturist.*



STUMP MACHINES.

Messrs. Gaylord & Tucker,—In your excellent paper, I find directions, hints, instruction and information with regard to every subject connected with the scientific practice of agriculture, with one exception, and that no small one for at least the newer portion of our country; and that is the getting rid of stumps. A great part of Vermont, New Hampshire, Maine, the northern part of New York, and various other sections of the country, are or have been pine plains, where pine stumps are so thick as to render it almost impossible to plough the land, at least with any kind of comfort. In some cases I have counted 200 to the acre. To dig these by hand is a most laborious and difficult undertaking, and when they are dug, it is no easy task to haul them off, or to burn them, as is sometimes practised. Besides many roots are necessarily left in the ground to snag the plough, and the poor subsoil is turned up on the surface by the process of digging, leaving (unless afterwards highly manured) a poor spot wherever there was a stump. Now the object of this communication is to show to your numerous subscribers an easy, economical and complete way, not only of removing stumps from the land "in toto," but of converting them into excellent fire-wood. The accompanying drawing represents a stump machine, invented 15 years ago by two brothers named Manchester, of this place. It is simply the wheel and axle, on a large scale. The uprights should be 11 feet high, 10 by 12 inches square, of hard wood. The sills 7 by 9 inches square, 14 feet long, and turned up at the ends, sled runner fashion, to enable it to slide easily on the ground. Let the posts be firmly morticed into the sills, and well braced. The axle or shaft should be white oak, ash or maple; 18 inches in diameter, with the gudgeons 8 inches. It should be 20 feet long, and 2 pins should be driven into it, outside the posts, to keep them together. The wheel should be about 18 feet in diameter, with 8 spokes, 4 of which should go through the axle, and the other 4 set as deep as possible into the shaft, without cutting away too much wood, for fear of weakening it. The spokes are to be white oak plank, 8 by 3 inches square. Let the felloes be sawed out of 4 inch plank, and planked by two courses of inch boards on the two sides, in such a manner as to "break joints" (as the phrase is) with the first set; thus, and at the same time, to form a groove to keep the rope from slipping off. Then get two strong chains made of 1¼ inch iron, and 12 feet long each. Fasten one end of each by a strong staple to the axle, and on the other end of one have a hook, on the other a large link or ring. Then fasten one end of a 1 1-4 inch rope on the wheel, give it two or three turns around it, and your machine is complete. Now bring your two yoke of cattle and one assistant; hitch them to the staples (which should be in each end of each sill), and drive where you like. Dig a hole under the main root of the stump (on one side if possible), and pass your chain under it. Hitch your cattle to the end of the rope, and they will draw any stump that ever grew in the ground. Then take off the dirt from the stump with a spade, and it will fall back exactly as it came up, leaving no hole to fill. There will also be no roots left in the ground for future botheration, and the soil which was about the stumps having never been tilled, will be distinguished as good spots instead of bad ones.

Now have an auger made, such as pump borers use *first*, only about four feet long, having a screw like a cork screw at the point. Bore a hole down exactly in the heart of each stump (for however rotten at the top they will generally be sound at the junction or knotting together of the roots), and put down about 3 inches of coarse blasting powder. This will blow the stump to atoms, and you may then convert them by means of your beetle, wedges and axe, into first rate wood for home consumption. Many farmers will not understand blasting, but it is, after a little practice, as safe and simple an operation as any other on the farm. You will want a crowbar, a priming wire of the same length as the auger, a 4 lb. hammer with a handle 5 inches long, and some match paper made into strips 3 inches long, and half an inch wide. After your hole is bored (and be careful not to have it go clear through by a foot or so), put down your powder. Then put in your wire, which should be made tapering, the small end about one-fourth of an inch in diameter, on one side of the hole Now fill the hole with pounded brick and damp clay alternately, pounding it down with the small end of the crowbar, and starting the wire every now and then, till it is full. Now draw the wire by putting the small end of the crowbar through the loop in the wire, and striking it up with the hammer, taking great care not to let the least particle of dust fall into the hole. Then fill the hole slowly with powder, apply your match paper (common wrapping paper steeped in a solution of saltpetre), touch fire to the end of the match, and take to your heels; and, depend upon it, the stump's powers of locomotion will be vastly assisted by this operation. The machine for drawing them will be cumbrous and heavy, but it will be strong, simple and effective. The whole cost of this apparatus will be between 50 and 100 dollars, but it is well worth while for every large farmer, or 3 or 4 small farmers in company, to possess one, wherever stumps occupy the ground. It is enough to say that the machine made and tended by the inventor, has been in constant requisition since that time (15 years), and never went at a stump which it did not take up.

I hope this article will not prove too lengthy for your columns, being a subject of very great importance to thousands.—*Albany Cultivator.*

Burlington, Vt., Aug. 14, 1843.